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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

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FIG. 118. Dr. Franz Buxbaum, of Austria, is the author of "Morphology of Cacti."

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EDITORIAL

THIS ISSUE of the Cactus and Succulent Journal of America ends its twenty-fifth year under one editorship. This modest magazine has weathered wars, depressions and inflations and has maintained its original format and subscription price of $3 per year. All other commodities have more than trebled in price but we have continued publication always looking forward to a leveling off of costs that would make the magazine a profitable venture. Even now in the face of higher wages and costs of materials we will venture on another twenty-five years because of our deep interest in these fascinating plants.

We feel that we have passed a low ebb in the growing of succulent plants here in America and we are confident that from now on there will be a renewed interest. In this issue of the JOURNAL we are announcing the publication of new books, both scientific and popular. The January issue will announce our publication of another book on Succulent Plants that will be one of the most valuable yet published. Now that the stock of the Britton and Rose monograph is practically exhausted we are working on plans for a monograph on cacti that will bring the classification up to date and will include the many new species that have been published since 1923. We have in our file of printing plates all of the "cuts" that were used in Britton and Rose as well as the thousands of "cuts" that have been used in the other books published by our Press. This library of printing plates is probably the largest collection that has ever been assembled and is probably the most valuable asset to start a venture of a new monograph. A work of this kind will take years to produce but will be a lasting contribution to the study of cacti.

We have several color plates that will appear in Vol. XXVI and we propose to change the policy of the JOURNAL so that it will not appear to have "grown up and forgotten the beginners who must start where we did twenty-five years ago." While reprinting the first twenty-four issues of the JOURNAL recently, we relived our early enthusiasm and noted the basic material that has been neglected over the last ten years. We will reprint one or two of the early articles that appeared in the JOURNAL to show the value of the material that was published in the early issues.

We want to thank all of our loyal friends who have seen us through these first twenty-five years and we want to make an appeal to new and old members to contribute to the JOURNAL. Our newer members must be prepared to take over so that the *next twenty-five years* will maintain the Journal's leadership throughout the world.

SCOTT E. HASELTON

FIG. 119

View from the pass, along trail between Pueblo Nuevo Solistahuacán and San Bartolo Rayón, looking north in direction of Pichucalco and Tabasco. (Right) View of San Bartolo Rayón from south. Trees in narrow band, across picture, before the town, are *Liquidambar styraciflua,* just breaking into spring foliage.

IN THE WETLANDS OF NORTHERN CHIAPAS

By T. MACDOUGALL

A traveller in Mexico is apt to get the impression of an arid land, and in general it is true. Nevertheless, there are areas in Mexico where—as the natives put it—"it rains in the dry season and pours in the wet."

Tuxtla Gutiérrez, capital of the State of Chiapas, nestles in a hot dry valley that does not suggest proximity to rain forest. It was in Tuxtla, one morning in February of 1950, that I boarded a bus serving communities along the completed portion of a state road that may one day connect with Pichucalco and the State of Tabasco. Our route followed the "Cristobal Colon" highway nearly half way to San Cristobal Las Casas, then branched off to the north, through Ixtapa, Soyaló, Jitotol, and to Pueblo Nuevo Solistahuacán—the latter two towns up in the pine county.

Next morning, with a boy of Pueblo Nuevo, I continued the climb to the north, now on foot. The pines and oaks here support a rich epiphytic flora that includes a spectacular large *Tillandsia,* with perpendicularly pendant inflorescences to six feet and more in length. On low, horizontal branches of the oaks, a shrubby, white-flowered *Sedum* grows and blooms along with the scarlet dwarf orchid, *Stenorhynchus* [=*Spiranthes*] *coloratus*. Two hours out from Pueblo Nuevo, we reached Rincón Chamula, a typical "chamula" Indian village, with its checkered layout of large square garden plots, fenced in by a solid facing of split pine slats, bound together with thongs made from the stems of the *Smilax* vine. Potatoes, onions and cabbages are the principal crops grown in these gardens. One hour more, and, at some 7000 feet altitude, we reached the pass. Before us lay a bank of fog, but on another occasion we saw the view (Fig. 119). Not a great deal of the landscape is wooded, and much less is virgin forest—the wasteful system of *milpa* farming is responsible for that—but everything in sight is lushly green. For the next few miles the trail runs along the face of a wet north slope. This is La Selva Negra. Here the rugged terrain and the climatic conditions have, to a large extent, protected the area from exploitation. La Selva Negra is cloud forest and, during the *dry* season, fog or rain is of almost daily occurrence. For a while I forgot the knee-deep mud, and that threat of rain, as one botanical discovery was made after another, but then—realizing that this was no place to spend the night—we hurried on down to Rayón (Fig. 119). I had planned to return to Tuxtla Gutiérrez by way of Copainalá, but these plans were now scrapped, for another walk, back through La Selva Negra.

In Tuxtla I lost no time in visiting Dr.

FIG. 120

A corner of Tapalapa, with view of ridge to west, in background. (Right) Valentín Villareal with pad of the lobed *"Epiphyllum"* of Blanca Rosa.

Faustino Miranda,[1] with samples from La Selva Negra. Only one cactus was repreesnted, a flat padded epiphyte which has yet to flower before it may be identified as an *Epiphyllum, Rhipsalis* or *Pseudorhipsalis*—or perhaps as none of these. Begonias were well represented, and there was a giant herb, which I remembered seeing as a boy in an English garden. Dr. Miranda was not familiar with it, but quickly verified the genus as *Gunnera.* He thought this might be the first record for Mexico.[2] The genus *Gunnera* has a remarkable distribution across both hemispheres. According to Hutchison, it occurs in the Philippines, in most of the East Indies, in Tasmania and New Zealand, in Madagascar, parts of South and South-West Africa, in a portion of southern Brazil, and then the full length of the South American continent (on the western side) to Central America. Another Selva Negra plant is a Nasturtium which Dr. Miranda identified as *Tropaeolum emarginatum.* Years ago E. J. Alexander had mentioned San Bartolomé, Chiapas, as the only known habitat locality of a Nasturtium in Mexico. Just where this San Bartolomé was, I had not ascertained, but gradually it became clear that it was none other than Rayón. On the maps I use, Rayón appears as San Bartolo Solistahuacán, and on some other maps it is San Bartolomé Solistahuacán. Dr. Miranda, who has the history of botanical travel in Chiapas at his finger-tips, tells me the botanists Linden and Ghiesbreght collected in this region.

With this quick survey of La Selva Negro I thought that I had seen the more noteworthy species of the wet climate flora of this part of northern Chiapas, but the following year Dr. Miranda[3] gave me a glowing account of a locality beyond Rayón—a virgin forest with undergrowth of tree ferns. Then he clinched matters by showing the herbarium sheet of a *Begonia* from Blanca Rosa, a species entirely new to me.

It was the afternoon of February 7th, 1951, that I arrived once again at Rayón. Here we left the north-bound *camino real* trail, and walked westward, to the village of Pantepec. It was still only 4 p.m. when we reached the town, but none too early, as half an hour later a torrential rain started which lasted well through the night. The next morning broke clear and sunny, though, and I made an early start—still travelling toward the west—for Tapalapa. The muleteer I travelled with from Pueblo Nuevo had continued on to his coffee *finca* destination, the day previously, so I now engaged a local guide, for the two or three leagues' trip to Tapalapa. The walk from Pantepec was mostly a climb, with two steep descents along the way to make the climb longer. As we gained altitude, there began to appear, on rocks and on oaks, the flat padded cactus which—for want of another name—I still call *Epiphyllum crenatum.* The last steep ascent brought us to a gentle moor-like slope which continues into Tapalapa, at the foot of an abrupt ridge. The site of the village is practically a moraine, with rills of

[1]Director of the Botanical Institute of Chiapas.

[2]Prof. Eizi Matuda lists one species in his recently published *Flora of the Districts of Mariscal and Soconusco, Chis.*

[3]In continuation of botanical collecting, and studies of the vegetative zones of Chiapas, Dr. Miranda had surveyed this area in August, 1950.

FIG. 121
Flower of *Pseudorhipsalis* sp., from forest north of Tapalapa. Note the two buds and the open flower on the same areole.

water and springs oozing out all over the place. A large grassy area in front of the fine old church is grazed to a lawn by sheep. Tapalapa is one of the more primitively native of Soque villages. Scarcely a word of Spanish is heard, and the women in general do not appear to understand that language. I had found *posada* at the house of doña Aguila Canseca. Doña Aguila is native to Bochil. She learned the Soque tongue in Tapalapa, and now uses it exclusively with her women neighbors. Her own children she addresses in Spanish, but they in turn are more likely to answer her in Soque. These observations were made while my good-hearted hostess was having the village scoured for victuals worthy of a visitor from the outside world. After lunch I was free to head for the ridge that walls in the village to the west (Fig. 120).

We scrambled up the talus slope and then skirted along the base of the main ridge to a narrow valley. Then on to a beautiful stream, heavy-shaded in parts by trees of many species, and more open in others, where the tremendous foliage of *Gunnera* again held me in astonished admiration. A short distance downstream we intersected the Copainalá trail, and followed it across the brook, then proceeded a way up the *escalera* (stairway), as this more abrupt part of the trail is called. This track is too steep for pack animals, but for the man on foot, I was told, it is two hours' shorter than the mule trail. This *escalera* may well be a stairway through a botanist's paradise. The small area we collected over, near the foot of the stairway, showed ornamental cultivated genera to be well represented—orchids, aroids, dwarf palms, bromels, and begonias. The five species of *Begonia* observed there gave me three new numbers. On the other hand, cacti and succulents were lacking, or at least I have no record of any in my field notes.

Next morning I arranged to join with Valentín Villareal, of Tapalapa, who was travelling to a *colonia* a little beyond Blanca Rosa, my destination for the day. The start of our walk, now toward the north, was through partly cleared land, up to a crest where I turned to admire the view back over Tapalapa. Then we rounded a corner and entered broken country covered with primeval stands of pine and oak, together with a mixture of other tree species. The natives do not cut down and burn this type of forest for their *milpas,* and, so long as it remains inaccessible to portable sawmills, it remains "undefiled by the hand of man." On the oaks here I began to see what appeared to be *Pseudorhipsalis macrantha* Alex., but several plants had flower buds, and *P. macrantha* of Eastern Oaxaca is a fall bloomer. Some well-budded pads were carefully packed away, on the chance that they would open later. The trail continued upward, until, just one hour out from Tapalapa, we reached the *portillo* (pass), at perhaps 7000 feet altitude. Here, on a level cleared site, with logs to sit on, we stopped to rest and take in the scenery. A path branched off to Ocotepec, in view to the west at about our own level. *Pseudorhipsalis* was in bud here, too, and this proved to be my last record of it. The trail now carried us continually downward, out of the pine zone, into an area of mixed hardwoods, becoming more and more cleared as we descended, then merging into open forest with "undergrowth" of coffee bushes. Just before reaching the coffee plantations the trail entered a small heavily-shaded ravine and followed a small stream—the *Begonia* habitat described to me by Dr. Miranda. Before I could remember this information, however, a remarkable plant caught my eye. Closer inspection showed it to be undoubtedly a cactus, and apparently an *Epiphyllum;* a terrestrial, with stems arching over the undergrowth until the tips sometimes touched the humus again, to root and form new plants. The largest pad collected had a maximum width of 38 cm. [about 15 inches]. The one pictured with Valentín is slightly less in width. A few more plants of this cactus were observed, all of them in the shade of the *barranca.*

Soon after this, we reached the Río Napak, very near to Blanca Rosa. The river crossing I shall particularly remember for the re-discovery of two recently described species, *Anthurium Mirandai* Matuda and the giant-leaved *Begonia MacDougallii* Zies. Just up from the river we reached Blanca Rosa (formerly called Santa Monica), a small settlement of Soque Indians, all of whom were Seventh Day Adventists.

FIG. 122
A flowering plant of *Gunnera* sp. in La Selva Negra. Local Spanish name is "capa de los pobres"—poor man's cape. Leaves two meters wide are not rare.

Valentín left me here; he had been good company, well versed in the names of plants and animals—in Soque. It was now late afternoon, Friday; a steady rain had started, and it was good to get the shelter of a roof. The Sabbath commenced at sundown, and all the next day was given over to repose and meditation and for meetings in the hut set aside for that purpose. Inside, the hut was clean and neat, and the platform occupied by the leaders was adorned with two compact bouquets of the scarlet-flowered orchid, *Epidendrum radicans* [=*E. ibaguense*]. My host did not cook that day, and I was becoming resigned to living off my own scant rations, when an invitation came to visit the house of a neighbor. While the man and I talked, his wife prepared *empanadas de frijol* and *pinole*. Hot, fresh tortillas were spread with cooked black beans, then doubled over and baked once more on the *comal*—these were the *empanadas*. *Pinole* was a beverage made from ground parched corn, brown *panela* sugar, and chocolate, to which was added hot water. After visits with two other families, and similar snacks, I felt very well-fed and nourished. The humble Bible students of Blanca Rosa have my gratitude and best wishes.

Among plant species not previously mentioned, but which added beauty and interest to many parts of the trail, I should mention the tree ferns of the genus *Cyathea,* the flowering vines *Cobaea biorita* and *Hidalgoa ternata, Fuchsia arborescens,* the orchid *Epidendrum radicans* [=*E. ibaguense*], and *Lycaste Skinneri,* though there were not many of this latter orchid. Two species of dwraf shrubs, *Rondeletia suffrutescens,* with blood-red flowers, and *Guametela Tuerckheimii,* were more rare. Dr. Miranda identified these.

In Tuxtla Gutiérrez a bud opened on the *Pseudorhipsalis* collected near Tapalapa, and two days later a second flower was photographed in Tehuantepec, Oax. (Fig. 121). In both cases the inner petals were distinctly yellow, and should this character be constant, it may one day be passed to the orchid cacti. *P. macrantha* crosses readily with *Epiphyllum "Ackermannii"* and with *Nopalxochia phyllanthoides.*

An herbarium pad of the lobed *"Epiphyllum"* from Blanca Rosa surprised me by drying within a few days—almost like a true leaf. Propagating material deteriorated rapidly in transit, and

only a few of the tips which were already rooted when collected, were finally established in New York. At present the thriftiest plant is in the greenhouse of Dr. H. E. Anthony, at Englewood, New Jersey. It will be recalled that Dr. Anthony was the first to flower that other lobed denizen of the North Chiapas rain forest—*Cryptocereus Anthonyanus* Alex.

Last April I returned to La Selva Negra, to collect certain seeds and plants. At this season I was not surprised to find new plants in bloom, but I was wholly unprepared to meet fellow Americans there—a young couple with a motorcycle. They had seen the road, on a map, and hoped to follow it through to the railroad in Tabasco. Were doing fine until they tangled with the Selva Negra trail.

The virgin forest, with its first floor ceiling of tree-fern crowns, as described to me by Dr. Miranda, remains on my list of field trips yet to be made. But each year this list grows longer —maybe I need a motorcycle.

* * *

EXPERIMENTS WITH SUCCULENTS

(From "The Gardeners' Chronicle," England)

Having built-up a collection of some 500 Succulent plants of all types and from all environments, and then finding that I should soon have to leave them for long periods while on National Service, I decided to split the collection into sections, the subjects in each section requiring similar treatment at the same season.

The Cactaceae were split into genera from desert regions and those native to the tropical rain forests of central America. Those in the latter group are mostly semi-epiphytic with wing roots and few spines. Plants which may be included here are the climbing Cereuses, the Epiphyllums, Zygocactuses and Rhipsalises. This part of the collection was planted in a shady position, and a rather damp atmosphere was maintained. Their compost should be very open and not unlike one used for epiphytic Orchids, with rotted leaves and Osmunda fibre forming the bulk of the compost.

The Rhipsalises were planted in a well-rotted log in which holes had been drilled and filled with a little of the compost mentioned above and rotted wood particles. Within a few months of planting, when the wood was sufficiently rotted to allow complete drainage and a free root run, the roots of the plants had ramified from the holes throughout the log. The aired growth is somewhat slow but very sturdy and of a dark green colour.

Zygocactus truncatus, when potted in this compost and watered somewhat freely from May until after flowering in February, will produce a mass of growths and flowers. Spraying during the resting season will prevent the plant from turning a reddish colour and shrivelling.

The desert section was sub-divided into: *a*, specimen plants of great age, size and variety; *b*, seedlings; and *c*, by far the largest group, all the young and immature plants, these being planted in zinc trays four feet by two feet, and six inches deep. The tray bottoms had large drainage holes which were covered with crocks and pea gravel to a depth of two inches. The remaining four inches, filled with a very poor and open Cactus compost containing much burnt clay and crushed red brick, and in this all the available and suitable species were planted. With less water than is normally given, the growth and flower production during the first and subsequent seasons was most impressive.

Plants which responded exceptionally well were the smaller growing Opuntias, species of Notocactus, Echinopsis and Rebutia, and Mamillaria bocasana, Parodia catamarcensis, Espostoa lanata and Echinocereuses. The plants placed in sections *a* and *b* need only be mentioned briefly as no unusual methods of cultivation were used. The pots containing the seedlings were plunged in peat and shaded with gauze in the hottest weather. The peat prevents the sun from baking the soil in the pots which consequently require less-frequent watering. The specimen plants were kept dry for the longest period and placed in full sun at all times.

In conclusion I would state that all plants have benefitted by these cultivation changes and that the most outstanding result was the tremendous improvement produced by the large root-run afforded by the trays. This, however, is not surprising as Opuntia robusta, when growing naturally, has a root span of 14 feet. *Peter Thoday, Cambridge.*

FLOWERING PLANTS OF AFRICA

The "Flowering Plants of Africa" is an illustrated serial with color plates from water color paintings. Under normal conditions parts are issued every three months, each part containing ten color plates. Per year, 3 Pounds. Government Printer, Pretoria, South Africa.

Since the publishing of this series of plates was transferred to South Africa in 1948 the following color plates of succulent plants have been issued: (The last plate published in England was number 1040.)

1948 *Ceropegia turricula*
Cotyledon grandiflora
Caralluma tubiformis
Caralluma distincta
Kalanchoe marmorata
1949 *Kalanchoe brachycalyx*
Crassula compacta
Crassula socialis
Caralluma retrospiciens
Caralluma retrospiciens var. *glabra*
Lampranthus haworthii
Erepsia pentagona
Brachystelma flavidum
Euphorbia fimbriata
Ceropegia serpentina
Caralluma vibratilis
Euphorbia corniculata
Brachystelma gracilis Bruce (new species)
Cotyledon ascendens Dyer (new species)
1950 *Duvalia tanganyikensis*
Caralluma carnosa
Monadenium schubei
Brachystelma pygmaeum var. *breviflorum*
Kalanchoe densiflora
1951 *Aloe munchii* Christian (new species)
Euphorbia waterbergensis Dyer (new species)
Brachystelma minor Bruce (new species)
Brachystelma ringens Bruce (new species)
Drosanthemum bellum
Drosanthemum lavisii
Huernia pendula Bruce (new species)
Aloe mcloughlinii Christian (new species)
Ceropegia grandis Bruce (new species)
Aloe kniphofioides

PLANTS FOR EXCHANGE

We will exchange cacti from New Mexico and western Texas for other cacti. Denis Cowper, Belen, New Mexico.

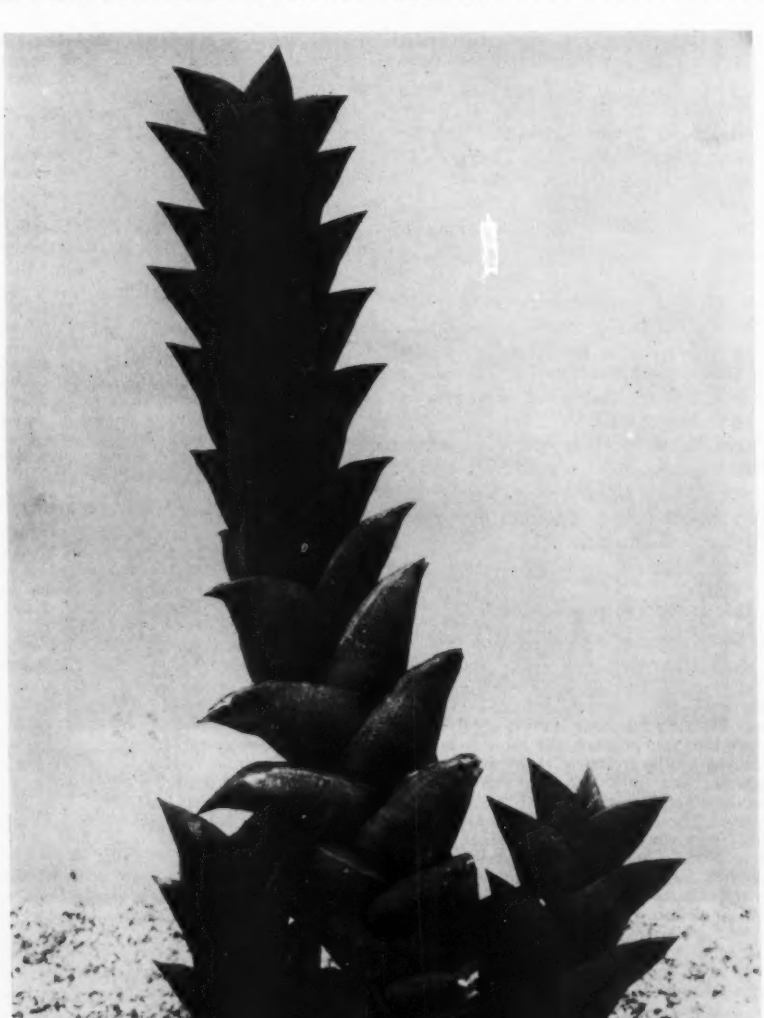


FIG. 123. *Haworthia asperiuscula* Haw. nat. size.

NOTES ON HAWORTHIAS

By J. R. BROWN

Haworthia asperiuscula Haw. Suppl. (1819) 60; Bak. in Journ. Linn. Soc. XVIII (1880) 200, in Th. Dyer, Fl. Cap. VI (1896) 335; Berger in Pflanzenr. IV. 38.111.2 (1908) 76; Poelln. in Repert. Sp. Nov. XLI (1937) 195, XLIV (1938) 204. *Aloe asperiuscula* Roem. & Schult. Syst. veg. VII (1829) 653; Kunth. Enum. pl. IV (1843) 496; Salm-Dyck, Monogr. (1840) sect. 3 fig. 2.

Plant with leafy stems 10-15 cm. or more tall, 3-3.5 cm. diam., and proliferous from the base. Leaves in 3 more or less straight rows, some-

what remotely imbricate, erect-spreading, somewhat recurved towards the tip, ovate-deltoid, acute, 2-3 cm. long and about 15 mm. broad towards the base, leathery and thick, young leaves dark green, older leaves becoming a dingy, brownish-green, scabrous all over; face of younger leaves concave, the older becoming more or less flattened but lightly grooved near the tip; back very rounded, keeled from about the middle and with roughened cartilaginous margins.

Type locality: Unknown.

Introduced from So. Africa to Kew Gardens about 1818 by Dr. Mackrell.

The illustration shows a plant from the Van Wyks Dorp area; Cape Colony.

Plants have been raised from seed which were very similar in appearance to Salm-Dyck's fig. Showing the smaller, very remote young leaves which gradually become more closely imbricate with maturity.

FIG. 124. *Dudleya Abramsii* Rose nat. size.

A SMALL CALIFORNIA DUDLEYA

By J. R. BROWN

Dudleya Abramsii Rose in Bull. N. Y. Bot. Gdn. 3 (1903) 14.

This little Dudleya was described by Rose from plants collected west of Jacumba in San Diego County, California, by L. R. Abrams. It has been recorded since then from Baldwin Lake, Hemet Valley, and Tahquitz Ridge. (Munz, Man. So. Calif. Bot. (1935) 213)

The plant illustrated here was collected by Alex Hawkes on the Johnston Grade, growing among the rocks at about the 3500 foot elevation in the San Bernardino Mountains of Southern California.

It shows a rosette of very glaucous, linear-ovate, acuminate leaves to 2.5 cm. in length. The flowering stems, (there were 3 on the plant, one was taken out to show the flowers more clearly) are about 8 cm. tall, the shortly pedicelled flowers being arranged in a 2 branched cyme. The glaucous calyx lobes are 3-4 mm. in length; the corolla about 10 mm. long, pale greenish-yellow to pale straw-yellow with pale purplish-red stripes and was flowering when photographed in mid-June.

It is not known by the writer how this little plant behaves in cultivation, as it has not been observed under cultivated conditions.

FIG. 125. Joshua Tree National Monument is about 4000 feet elevation and looks down on the Salton Sea which is below sea level.

ADVENTURES IN JOSHUA TREE COUNTRY

By LADISLAUS CUTAK

July is definitely not the time of year to visit Palm Springs or the wide sweep of unbroken desert which faces it on the east and south. But Palm Springs is the home of Patricia, Chester and Clark Moorten and all three swear there is no place as delightful as their village. In my opinion the Moortens are correct for about half the year but when midsummer arrives with temperatures around 110 to 120, I'd like to be somewhere else. Several years ago I had the opportunity of visiting the region in late winter and found it ideal, as do ten thousand visitors annually, but when this large number dwindles down to about eight hundred or less inhabitants in the summer, I need not fear to incur the wrath of the Chamber of Commerce when I disagree with the Moortens. Even one of the local publications admits that Palm Springs in summer is a ghost town and that all but three of the permanent population of 800 wish they were some place else in midsummer. These three must be the Moortens of California.

Dr. John Poindexter, professor at Occidental College in Los Angeles, offered to drive me to Palm Springs. A visit with the Moortens was imperative even in the heat of summer. Prior to descending upon Palm Springs we made stops at Ralph Diehl's in Vista, at Mergets, and at Ruth Baird Larabee's at Encinitas. Diehl has a fascinating cactus garden set among Avocado trees. White-spined cacti appear so healthy and clean at his place. A number of rarities occur in his garden. One that intrigued me was the enigmatic *Pachycereus Gaumeri* from Yucatan and it was producing light green flowers at the tip of a four-angled slender stem. The flowers in this species refuse to open wide. This particular cactus is not characteristic of the genus and there seems to be some skepticism as to its placement in *Pachycereus*. The Mergets operate a commercial cactus nursery on a hillside, specializing in succulents of various kinds.

Our visit with Mrs. Larabee was, unfortunately, made so late in the evening that very few color shots of her garden could be made. Someday I must return for her place is very intriguing. The garden spreads out over rolling hilly terrain which permits excellent shots of plants against the sky and fantastic silhouettes at eventide. Mrs. Larabee is a cactus and succulent en-

thusiast. A large planting of Aloes and Euphorbias appears near the house which overlooks the Pacific only a short distance away. Agaves, Yuccas and numerous cacti are prominently featured and as these plants were sending out blossoms lent enchantment and color to the scene. The Red Hot Pokers (*Kniphofia*) brilliantly lighted a ravine with their tall red and yellow spikes and put one in mind of an African setting. The Kniphofias or Tritomas as they are usually called are valuable summer flowers and put you in mind of the Aloes to which they are related. Another attractive plant with whorls of orange-scarlet flowers along its stem struck my fancy. This was the Lion's Tail or *Leonotis leonurus*. It grows about six feet tall. *Puya alpestris*, essentially a plant of arid places, does well in the Larabee garden. It was still in blossom and possesses a somewhat unfamiliar but nonetheless attractive shade of steel-blue green accentuated by orange-colored anthers. The rich purple flowers of the Peruvian Pleroma shrub beside the guest house gave me a longing to possess this striking plant. The Silver Trees or Leucodendrons were reflecting silvery shimmers as the wind blew and sun cast its last rays. *Leucodendron argenteum* may attain a height of thirty feet and is one of the most beautiful trees to come out of South Africa where it occurs wild in a few places on the Cape Peninsula. As darkness was approaching Mrs. Larabee beckoned us to come indoors and partake of a delicious luncheon. A surprise of the meal was a dish of Yucca flowers prepared especially for me. Mrs. Larabee is a reader of SPINE CHATS and in the July-August CACTUS JOURNAL of 1953 I wrote about Yucca flowers which can be eaten both raw and cooked. She wondered whether I actually would eat the succulent petals. Why not?

We left Mrs. Larabee at 9 p.m. for Palm Springs which was a good three hours' drive away. The breeze was stiff and cold, so we drove with the windows up, but after crossing the mountains on the Palms to Pines Highway and descended into the valley the temperature began to rise considerably. Arriving at Palm Springs at midnight it was really hot! The Moortens were expecting me, so we drove right to their door and John planned on a return trip to Los Angeles immediately. *Immediately* meant just two and one-half hours later as John stayed to view kodachromes of a few Mexican trips undertaken by the Moortens.

Early in the morning, after breakfast, the three Moortens and I climbed into a Buick station wagon and headed north out of town by way of Garnet, the old Palm Springs railroad station where former tourists used to alight and be driven across the desert to the resort in horse-drawn vehicles. The main highway was used for a short distance and then the road traversing the Devil's Cactus Garden was taken to Morongo Valley by way of Morongo Canyon. The Devil's Cactus Garden at one time contained thousands of Barrel Cacti and wickedly armed Chollas, but truckloads were removed during the cactus craze era until laws were passed prohibiting the removal of plants. The Devil's Cactus Garden contains one of the best stands of *Ferocactus acanthodes* in southern California. This barrel cactus is globose in youth and in maturity becomes cylindrical and as tall as a man, but sometimes exceeding his height.

In Morongo Valley the first Joshua Trees, botanically, *Yucca brevifolia*, begin to make their appearance. It is widely distributed on the Mojave desert. Indians used to gather the seeds of this plant and grind them into a meal which was eaten either raw or cooked as a mush. Today, surgical splints and souvenirs are made from rotary cut yucca veneer. At one time pulp for paper was also made from it but the extraction and manufacture was laborious and costly so was abandoned.

FIG. 126. Patricia Moorten between adult and juvenile Joshua Trees.

Yucca brevifolia received its nickname from the Mormon colonists who trekked across the Mojave desert. When they came, thirsty and famished, to the mesas and ravines bordering the San Bernardino Mountains they were so impressed by these bizarre looking trees lifting their arms to heaven as if in supplication that they took it as a "sign" from heaven that the promised land was near.

FIG. 127. *Yucca brevifolia*—an average size tree in the Joshua Tree National Monument.

The Joshua Tree reaches a height of 30-40 feet and the dark brown trunk may be 1-3 feet in diameter. The young trees remain unbranched until they have produced flowers, then they may shoot out arms in every direction so that no two trees are ever alike. At the tips of these arms are clusters of short rigid leaves. Flowers are usually produced in the spring months and are greenish white, congested in heavy panicles at the ends of the branches. The buds, in the earliest stage, resemble a large artichoke.

When we reached the community of Joshua Tree, gateway to the Joshua Tree National Monument, Pat and I suggested a stop be made for a bite to eat and a check made of the car before continuing into the rocky preserve. There was indication that the radiator was acting up. Slim decided to keep on driving, hinting that lunch could be had after a short visit to the Monument for pictures. As the road wound to higher altitude the radiator boiled over. Slim finally stopped at the fourteen mile point (or close to the Hidden Valley area). He suggested I shoot my pictures of the weird Joshuas while the engine was cooling. The sun was hot as blazes and after two hours of photography I decided to call it quits. Slim tried to start the engine but no luck. Finally he suggested pushing the car, but the engine wouldn't turn over. We'd push, get the car rolling and jump in; Slim always under the impression that surmounting the incline ahead would do the trick. After four miles of pushing and coasting in the blistering sun tempers were being aroused, so Pat and I

decided to push no more, but hoped some motorist would come along and rescue us. Since only two cars passed us while we were busy photographing, the chance of meeting up with a motorist was very slim. Finally, about six o'clock in the evening, a young ex-soldier in an old Studebaker was flagged and cajoled into pushing us into town. It was our luck that he had come along for goodness only knows how long we would have been stranded.

With canteen empty and half famished, young Clark and I explored for a restaurant while Slim hunted up a mechanic and Pat stayed with the car. It was our luck to find one cafe still open, although the owners were preparing to close for the night.

For best enjoyment it is advisable to visit Joshua Tree National Monument any other time of the year but summer. However, were it not for the unforeseen inconvenience just experienced, I wouldn't have minded the heat at all and despite it I will consider this last trip a very fruitful one. I was first introduced to Joshua Tree country in 1946 when Scott Haselton, Bill Marshall and Gil Tegelberg organized a three-day camping trip for my benefit. I fell in love with the scenic wonders of the region and when the Moortens suggested another visit I accepted.

Joshua Tree National Monument is a fantastic wonderland of rocks and bizarre trees. Nature has strewn huge boulders all over the place and the elements have worn them into grotesque shapes. Sometimes the rocks are piled in a heap with hundreds of sheltered little coves that invite the campers to make use of them. Among the boulders many colorful plants find refuge. Clumps of Hedgehog Cactus, Cholla, Nolina and Spanish Dagger grow in abundance. The whole region reeks of legendary history—of gold seekers, cattle rustlers and adventurous souls. Hidden Valley, one of the Monument's outstanding features, was used by cattle rustlers for a long time. The spacious level meadow is surrounded by two parallel piles of granite boulders which converge at the western end and deceptively make the walls appear as a single ridge. Stolen cattle were kept inside Hidden Valley until an opportune time arrived for driving them across the border to be sold. In Hidden Valley, near the south entrance, is Trojan Rock —an enormous face of an armor-clad Roman soldier, while at the northern end is Bull Rock high on a rocky pinnacle. Not too far away from Hidden Valley is Split Rock, a landmark which gets its name from the cleft in the top which is plainly visible. There is a large cave under Split Rock which is now frequented by campers and picnickers.

FIG. 128. One of the largest Joshua Trees which has recently been destroyed by vandals.

Editor Cactus and Succulent Journal:

I am enclosing an article published in the *El Paso Times* (Texas) of how Mrs. Rodgers made her lovely garden and I thought it might interest readers of the JOURNAL. Mrs. Rodgers organized our Cactus and Rock Club.

MRS. GRACE CARDEVELL, *Secy.*

IF YOUR SOIL IS POOR, BUILD A ROCK GARDEN

By MRS. M. I. TAYLOR, JR.

Poor soil on your lot? The yard a stubborn bed of caliche? You're going to give up gardening before attempting again to pick and shovel your way through nature's cement?

Don't dispair! You can have a garden. The other day we found the perfect answer for you.

A rock garden is so suitable for us who have built our homes in the sections of El Paso where caliche prevails. We found the proof of this after having the privilege of seeing the R. H. Rodgers garden here in El Paso. We were spell-bound by the beauty, the richness possible in a rock garden. Rocks had been used so skillfully to retain the soil and to build up terraces for different plantings.

Our first impression was of the dazzling color. It seemed utterly impossible to this uninitiate that rocks came in such a riot of brilliant colors. The Rodgers garden looked as though an imp with a paint brush and access to the entire spectrum had skipped hither and yon coloring everything touched.

Facing south to get the warm sun all day and guarded by a lone and tall yucca tree, is the cactus bed. The retaining wall is, of course, rocks—green, pink, white, black, brown, blue. These rocks have come from all over the country as the Rodgers are avid collectors. There are rose rocks from Oklahoma looking for all the world like petrified blooming roses. There is beautiful rose quartz from South Dakota. A slab of blue polka dot rock from Oro Grande. There were big rocks that must have broken many an amateur prospector's heart—Fool's Gold—gleaming so bright in the sun. From Duncan, Ariz., came bird's nest complete with the eggs. Mica has been in the newspapers as being valuable commercially. We ran our finger along the surface of the mica rock and little slivers of it clung to our skin. Mica is used as an insulating material and from it also comes vermiculite which many gardeners use for aerating the soil and for water retention. One of the most beautiful types of rock had the imprint and delicate traceries of plant-life that grew—who knows how many many thousands—years ago.

In this south rock garden devoted solely to desert cacti grow 100 varieties. There are the tall night bloomers and other kinds from Old Mexico, California and South America. Mrs. Rodgers said that at the height of the flowering period 600 to 700 blossoms beautify their yard. Garden clubs have pilgrimaged to the Rodgers place during April and May, choice months to see this choice garden at its best.

If you long for the loveliness of flowers in your own yard but feel dejected and defeated because of poor soil or hard caliche on your lot, why not take a tip from the Rodgers? Don't dig down. Build up! Retain your garden by using some of the lovely and different rock available in this area. Before long, perhaps like the Rodgers, you will be planning enthusiastically week-end trips for the discovery of unusual and odd rocks for your own hobby garden. If you do, there is a world of joy and interest ahead.

ECHEVERIAS WANTED

Will purchase or exchange Echeverias and other Crassulaceae *species* or *named hybrids* for other Echeverias or tropical plants. Am rebuilding my collection which now contains over 300 plants. European collectors will receive courteous attention. Don Skinner, 8627 South Denver Street, Los Angeles, California. Business phone Pleasant 1-7523, Res. Pl. 8-3729.

FREAKS AND CRESTS

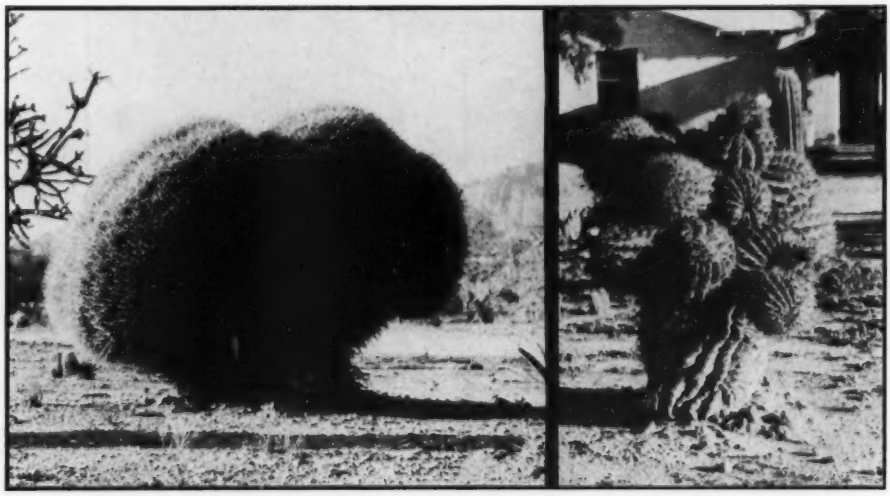


FIG. 129. *Ferocactus wislizenii*—a perfect 45 in. crest found by Frank Mark in Arizona. (Right) *F. wislizenii* with 40 "heads" growing on Frank Mark's ranch near Phoenix.

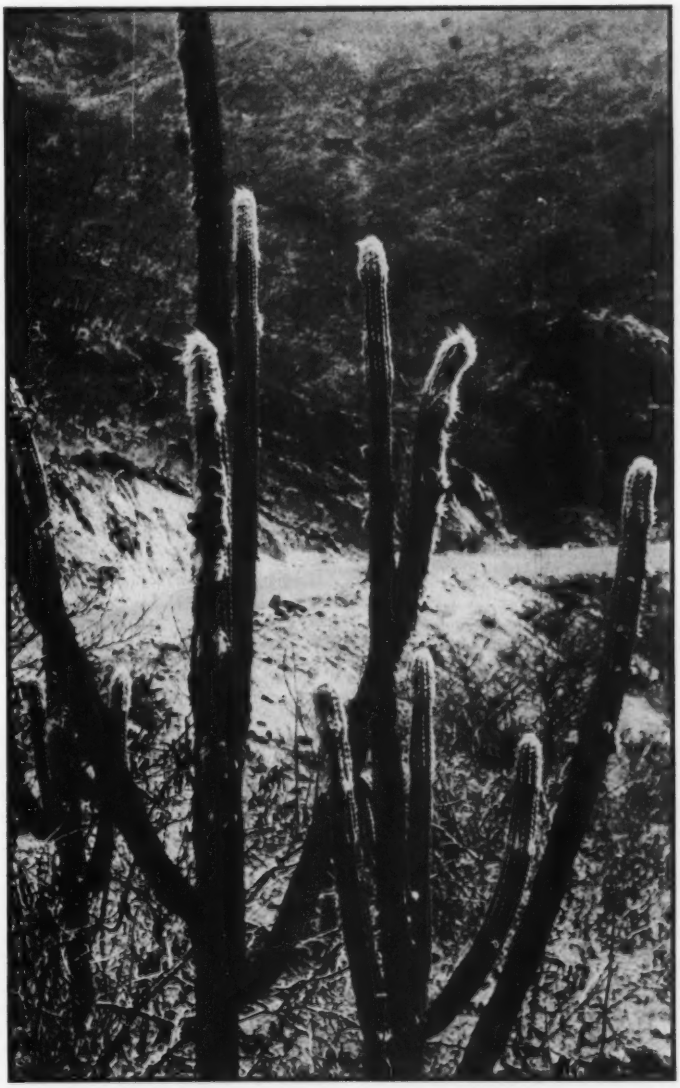


FIG. 130. White, woolly *Cephalocereus* in fruit near Totolapan, Oaxaca.

MORE ABOUT MEXICO

By HOWARD E. GATES

Photos by E. YALE DAWSON

A little farther on, we came into an area with *Cephalocereus macrocephalus*. These were gigantic branching plants growing somewhat in the general appearance of *Pachycereus*. It was easy to spot them at a distance as they were preparing to bloom and the apical portions were covered with longer pinkish bristles instead of spines. Scattered around were the low clusters of *Ferocactus robustus* and *flavovirens*. *F. robustus* was especially notable for great numbers of branches. Occasionally we found clusters eight feet across, several feet high and literally composed of hundreds of branches four to five inches in diameter. Both the flowers and fruits are yellow. *F. flavovirens* had somewhat larger but not so many branches, more heavily spined.

Still farther we came into a colony of gigantic and

freely branched *Cephalocereus hoppenstedtii.* These plants with numerous ribs bear rather weak gray spines. The cephaliums are formed on one side of the branches near the tops. These cephaliums become several feet long and are composed of dense mats of woolly fibers, two to three inches thick. Each year these cephaliums are extended upward a few inches by the new production of creamy or yellowish wool. The older wool below gradually turns black. The flowers and fruits are borne within the mass of new wool. This colony of *C. hoppenstedtii,* must be an unusual one as Dr. Helia Bravo states in her book that this species never branches.

Every mile seemed to bring its new species of plants. *Cephalocereus chrysacanthus* appeared in a robust form branching from a short trunk. The purplish red fruits were almost hidden by the masses of wool surrounding them.

Higher we had passed an abundance of globular *Mammillaria mystax* with long twisted spines and carmine flowers. Here there were even more of the much smaller but freely clustering *M. sphacelata.* These were rather a dirty light gray color, not as white and clean as when greenhouse grown. The small bright pink flowers were followed by short scarlet fruits.

We were in rather high, arid country instead of the tropical brush land of the west coast. Near Zapotitlan de las Salinas, we began to find the outlying farms and pastures fenced with rows of *Lemaireocereus bollianus.* Since this is the type species for the genus *Lemaireocereus,* I believe all of the many other Mexican species now known as *Lemaireocereus,* will eventually find their way into other classifications. There is nothing else like it that I know of in Mexico. It branches at the base, sending up a comparatively small number of branches, which arise erectly, closely set together, to a height of occasionally twenty-five feet. In spite of their height these branches are only four or five inches in diameter and bear many spines of which the longest point downward decidedly. Aside from *Pachycereus pecten-aboriginum,* the fruits are the largest of any cactus I know. Exclusive of the many long, sharp spines which almost hide the dark purplish skins, the fruits range up to three and a half inches in diameter and four and a half in length. When fully ripe, the red pulp is practically a liquid filling the cavity enclosed by a fairly thick skin. These fruits are borne in groups of from two to six on the extreme tips of the branches.

Along with the *L. hollianus,* we found clusters of straw yellow spined *Mammillaria elongata, Myrtillocactus,* very colorful single headed small plants of *Ferocactus nobilis* and a dwarf *Pedilanthus* bearing slipper-shaped scarlet flowers on the tips of its bare branches. Since all the *Ferocactus nobilis* we saw were small, we suppose the larger ones had been carried in for candy making or de-spined and fed to the cattle in a time of drought.

Between Zapotitlan and Tehuacan, we passed over a range of rugged limestone hills with several deposits of milky white onyx and some salt springs. The water from these springs was led into shelf-like basins built one below the other in steps upon the hillsides where solar evaporation precipitated the salt. On many of the slopes were open forests of *Cephalocereus hoppenstedtii* but here they were in all the typical single branched form. They were thickest in the middle, gradually tapering towards the tops and were slightly curved in one direction.

In the bottoms and sides of rugged canyons appeared colossal plants of *Pachycereus columna-trajani* which seems to be synonymous with *Pachycereus chrysomallus.* My companion, Dr. Dawson, accepts them as *Pachycereus* but I am dubious. In general appearance they are typical *Pachycereus* with a short, stout trunk and numerous massive upright branches. However, the flowers are borne in an apical crown of yellowish wool and brown bristles. The un-opened flowers were coarse and heavy with short perianth segments that did not look as though they would open into the campanulate flowers of the other Pachycereus. We were too early in the season to find fruits and form a more definite opinion.

On the lower hills were good stands of the massive *Echinocactus grandis* which is quite similar to *E. ingens.* Some of the plants were two feet thick and six feet tall. At the bases the ribs and spines had weathered away showing great age. A notable feature of the larger plants were annular constrictions with the body above bulging as over a fat man's tight belt. The yellow flowers were borne in a circle within the terminal disk of wool which distinguishes *Echinocereus* from *Ferocactus.* The mature fruits had a thin papery skin with considerable wool adhering and were filled with brown seeds.

As we crossed the valley to enter Tehuacan, all the cactus disappeared. Around the city, except for the fruits in the markets, a traveler would not realize that he was in one of the world's richest cactus territories.

North of Tehuacan, we crossed over a high mountain range and entered the valley of the Rio Blanco which winds on down past Orizaba and Cordoba to the Gulf of Mexico. At moderate elevations on this eastern slope, there appeared to have been heavy rains and the lush, tropical vegetation was all green. In places the highway passed between plantations with coffee growing in the shade of larger trees. Bananas, oranges, mangoes, avocados, sugar cane and flowers were important crops. Bromeliads, orchids and epiphytic cactus were crowded together in great masses on some of the roadside trees.

We were surprised as we entered the lowlands to find the climate becoming dryer the closer we were to the coast. Personally I had always supposed that behind Vera Cruz would be wet and swampy with such crops as sugar cane and possibly rice. Actually much of it was grazing land with little farming and few cactus. Most of the cactus were in the *Opuntia, Acanthocereus* and *Hylocereus* groups with a few Epiphyllums. Bromeliads, both terrestrial and arboreal, were abundant and colorful.

From the point of arrival on the Gulf at Boca del Rio, the highway ran close to the shore past the Mocambo bathing beach with its immense resort hotel crowning a low hill. We found Vera Cruz to be built on low sand dunes with a ring of cocoanut-covered, low, sandy islands, several miles at sea guarding the approaches. The modern harbor was well protected with seawalls though we expected to find more than the five or six large vessels at the docks.

Our route from Vera Cruz, led northwestward to the state capital at Jalapa. In this direction, the coastal plain was narrower and the vegetation increased more rapidly. There were large citrus and pineapple plantations. In the hills toward Jalapa, we noted large cactus that at a distance resembled large *Lemaireocereus.* However we readily identified them as *Cephalocereus scoparius.* This plant has fluted, many ribbed branches that arise in an irregular manner from a short trunk. This is another of the so-called *Cephalocereus* that does not have a cephalium. The flowers appeared just below the branch tips in a ringed area that bore longer and more bristly spines than the short stouter ones on the lower portions. See Fig. 28, Page 172, C. & S. Jour. XXIV. The reddish spineless fruits are small, usually described as being the size of a hazel nut. Growing in the same region, usually in

groves of trees, were plants of *Cephalocereus sartorianus*. These were typical plants of the *Pilocereus* group with white wool on the upper portions of the ribs but not long enough to hide the furrows. The fruits were quite similar to the flattened apple shaped ones with red flesh and black seeds that we had found on other species. Scattered under trees in one grove we found *Mammillaria eriacantha* growing curiously. They were on the flat tops of coarse grained rocks, not growing in soil or in cracks, but with the roots spread over the rough surface in the manner of lichens. None were found growing in soil, but this may have been due to the tramping out by cattle. The general appearance of these plants was that of *Mammillaria elongata*, well covered with stiff, straight, golden brown spines.

(*To be continued*)

NOW LET'S PREPARE FOR WINTER

The time of year has now arrived when the plant collector and grower must forget the problem of trying to get their plants to flower and devote himself or herself to the annual problem of preparing their plants for a successful holding over until the next spring.

Those growers living in the colder parts of the country where temperatures drop into the low 20's or lower have a much more trying and difficult task than do those living in warmer climes. By now, no doubt, you have started to withhold water from your plants, only allowing them enough to keep them from dying or drying up completely. This really does no harm to most succulent plants as they appreciate a rather long resting period and will usually do much better the coming year when allowed this chance to rest and recuperate from a long summer's growth.

There are some plants, mainly Opuntias, which will not have any trouble remaining outside all winter, even under a blanket of snow for some time, but most of our plants cannot stand a drop in temperature below possibly 27° or 28° F. and this for only a short time.

The place of storage during the winter will depend entirely upon the grower and whatever arrangements he can make but the storage space should be dry, with a good air circulation, and when possible with some heat, such as a basement near the furnace or in the attic where it is heated somewhat from the heat from the rest of the house.

If you have a glasshouse which is heated, the plants most susceptible to cold should be stored in it. Even under the benches will do in most cases. Here in Southern California, a lathhouse will often prove sufficient protection, but in the colder regions this will seldom protect the plants enough.

Kitchen, living room or bedroom windows sometimes furnish a winter storage area but this often leads to the temptation to water more and to keep the plants growing throughout the winter, thus cheating them of the much needed rest period and reducing the chances of heavy flowers the following summer.

Here in the South and West where real cold weather is the exception rather than the rule, it is usually possible to leave all your succulent plants outside during the winter unless the temperatures drop below 27°, when covers placed individually on the most susceptible plants will usually prove all the protection necessary although especially tender plants such as the Kalanchoes, the Mesembryanthemums and a few others will probably need added protection or even need to be moved inside a glasshouse or other shelter.

Our plants are classed as succulent, principally because they have developed the capacity to store moisture either in their stems, leaves or bodies, to be drawn upon in times when no outside moisture is available, therefore a succulent plant that has been allowed to go into the winter with its stem, leaves and body full of moisture will be damaged or freeze much quicker than one that has been correctly dried off before cold weather comes.

By drying off, we mean to stop watering as regularly or as much. In our section of the country, November 1st is usually early enough to do this as our cold weather does not usually arrive until January or February. In colder areas, cold weather arrives much earlier so the drying off process should be commenced that much earlier to correspond with the arrival of cold weather.

With a large dose of common sense and a reasonable amount of care the cold weather loss of succulent plants can usually be held to a very small minimum.

It is foolish and usually un-appreciated, for a person in one section of the country to try to tell people in other sections how to grow or care for their plants, but sometimes a few suggestions can be of some help if they are applied to the different conditions in another region. I hope these few suggestions will be received in the spirit in which they are made and that they may prove of some help and value to you.

HOMER RUSH

PLANTS WANTED

Arrojadoas—any species, *Cephalocereus leucostele* (Stephanocereus), *Lemaireocereus queretaroensis, Lemaireocereus montanus, Trichocereus pasacana, Pachycereus chrysomallus.*

Kindly quote prices to Mrs. Chas. J. Lewis, 201 Hazeltine, Millbrae, Calif.

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: Is there a pink flowering *Lobivia famatimensis?*

Is *Notocactus rutilans* red spined?

What is the color of the flowers of *Lobivia cinnabarina?*

Is too much sun harmful to *Echinocereus pectinatus castaneus?*

Do you recommend not turning *Notocactus Leninghausii* to insure blooming and avoiding sunburn? Mine is beginning to lean.

How tall does *Haageocereus multangularis* (chosicensis) grow?

What is spine coloring and texture of *Oroya peruviana?* Mrs. Lester Tucker, Oregon.

Answer: The normal flower coloring of *Lobivia famatimensis* is orange or crimson. The species is quite variable in cultivation. This may be due to some hybridization. In the wilds it is probably a low, clustered plant from a thick rootstalk. I have never collected it wild. It is one of the handsomest flowering species the blossoms being large with satiny petals. With us it is mostly spring and early summer flowering but sometimes blooms again in fall.

Notocactus rutilans produces russet spines which shortly turn brown or gray. The plant body, when dormant, may become quite reddish. It reaches flowering size at 1" to 1½" in diameter, the areoles small and oval with whitish felt, numerous radial spines and two slender centrals. The blossoms are very pretty about 1½ inches across, pink or red-pink the centers white, stamens yellow, stigma red. The whole plant is charming. Blooms freely in the spring. It was imported first from South America as *N. Mueller-Melchersii* but this is quite a different plant.

Lobivia cinnabarina bears dark red blossoms during the spring months. *Echinocereus pectinatus castaneus* is a handsome variety from Mexico. It colors best in full sun. Like *E. rigidissimus* the spines are colored, the colors being in bands. The flowers are very large, pink in color.

Notocactus Leninghausii always grows in an odd way, the plane of the top, the growing center, being at about 45° angle to the sides rather than the customary 90°. One who is not familiar with the plant would think that it is turning toward the light. This is true of course but turning it around is not going to remedy it. It is one of the attractive features of the plant. *Notocactus graesneri, N. Hasselbergii* and, to a lesser extent, *N. Schumannianus* and *N. Grossei* have the same habit. Mr. Backeberg with some justification has erected two new genera, *Brazilicactus* which includes *N. Graessneri* and *N. Hasselbergii* and *Eriocactus* for *N. Leninghausii, N. Schumannianus* and *N. Grossei.*

Notocactus Leninghausii flowers, with us, in the spring. The flowers are large, pale yellow, appearing as woolly balls at the growing tip and take a long time to develop. It is rather erratic in flowering, some plants flowering regularly when 3 to 4 inches tall, others attaining much larger size before flowering. The plant is one of the handsomest cacti with soft yellow bristles rather than spines. When it reaches some size it branches freely from the base forming splendid clusters.

Haageocereus multangularis grows from 2 to 3 feet tall. Some of the related forms, in rare cases, may reach 5 to 6 feet. The plant naturally branches from the base forming a clump. The spines are quite short and generally golden or yellow in color, the ribs numerous, low, the stems 2 to 3 inches in diameter. Well grown specimens are glorious. The blossoms are large, noctural, white with an odd fragrance. There is a multiplicity of forms growing in central, coastal Peru at 2000 to 6000 feet, in some cases almost sea level. To the botanist they present a tangle that only a local botanist with years at his disposal could hope to clear up. Some of the best forms are heavily clothed with long silky hair, even longer than in *Espostoa.* Some grow in clay soils others in yellow granite but all choose to be within the fog belt. In some localities, due to the configuration of the land, the fog comes in low and there you will find the plants at low levels.

Oroya peruviana is variable in spine color, some being quite red, others yellow. In the wilds most appear as bright golden yellow. The plants are globular with up to 25 ridges, the ridges low, tubercled; areoles narrow triangular, wider at the top, felted; spines in a somewhat pectinate arrangement a half inch or so long, curved, slender with sometimes 1 or 2 centrals. The plants are 3 to 4 inches across but at the type locality may reach 10 inches. There they grow in alluvial soil on a bench above the river. Their real habitat is among the various grasses on the slopes at 13,000 to 14,000 feet. Oroya, the town in central Peru for which they were named, seems to be near their northern limits. They are often seen in the passes above 13,000 feet. Two or three hundred miles south they appear in great numbers growing in various habitats sometimes by shallow estival lakes, again on grassy slopes or up among the rocky cliffs;

usually in company with *Tephrocactus* (Opuntia) *floccosa*. In some regions they were almost always in clumps in others almost always as single heads. The southern plants seemed to have generally, fewer and larger ribs. The flowers are very vivid either yellow or bright coppery red, lovely spots of color in the monotonous homogeneity of dull yellows and greens of the rolling hills on the high alto plano.

(Send in your questions)

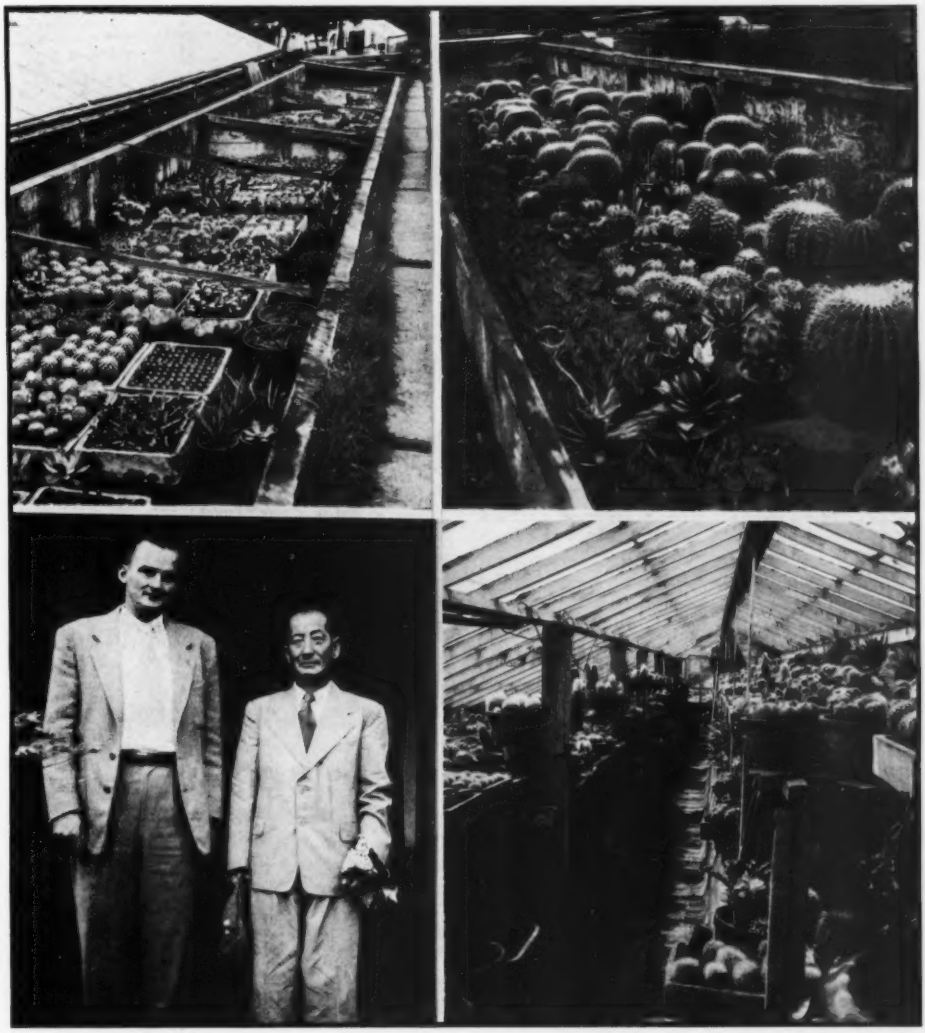


FIG. 131. (Top) Cold frames with healthy plants growing in the sandy loam. (Lower left) The author and Genichiro Katagiri. (Lower right) Note excavated aisle and low construction of greenhouse.

A VISIT TO A CACTUS NURSERY IN JAPAN

By LIEUTENANT JAMES E. HARMON, *U.S. Navy*

Japan, a land of mystic oriental beauty, with towering snow capped mountains wreathed in clouds and lush rain drenched valleys checkered with verdant plots, might not appear to be a country where there could be a great interest in Cacti. It might be assumed that a nation with such an aesthetic sense and an appreciation for delicate beauty would not find the gaunt, stark,

forbidding appearance of most cacti very interesting. This would be a misconception, for the Japanese people exhibit a genuine appreciation of the functional beauty and bizarre appearance of the cacti. This is demonstrated by the great interest in this group of plants throughout Japan. The traditional "green thumb," so often attributed to these people, offsets the effects of adverse climatic conditions; so there are many excellent specimens in private "window sill" collections. The flowering periods of these plants are always occasions of much comment in each locality. It is easy to visualize the interest that would be aroused by cactus flowers in a country where a holiday, "Hanamatsuri," is dedicated to flowers, and where even the crowded, busy city buses all display a fresh, dainty bouquet of flowers as standard equipment.

Early in 1953 the writer was invited to visit the Kyorakuen Nursery located in Fujisawa, Kanagawa, Japan. Starting from Yokosuka, the hub of American naval activity, it is a short ride by a fast, modern electric train to Ofuna where a transfer must be made to another train to Fujisawa. The Kyorakuen nursery is easily recognized just before the train stops at Fujisawa, by a large columnar cactus rising over the fence.

The nursery is surprisingly large and covers approximately one acre. The specialty is cactus culture and propagation on both a commercial and experimental basis. An interesting adjunct to the business is the culture of Bonsai; the very artistic dwarf trees grown in small pots. The Kyorakuen nursery is owned and operated by Mr. Genichiro Katagiri and his son; Mr. Shigeru Katagiri. The latter has recently contributed a work on Chromosome numbers and Polyploidy in certain Cactaceae which appeared in the September-October issue of this JOURNAL.

The elder Katagiri's father pioneered the growing of Cacti in Japan and now the younger Katagiri is following in his grandfather's footsteps. He is a graduate of Tokyo University and has specialized in the study of Cacti. Both men are members of the Cactus and Succulent Society and eagerly await each issue of the JOURNAL and the information it brings.

The greenhouses at the nursery are low with a trench excavated between the two rows. This style of construction is said to conserve heat. Most of the other cacti were protected by cold frames. Very few plants were unprotected and in the open. Some Opuntias and columnar types were planted in the open. In the winter seasons, these cacti were wrapped in rice straw to avoid damage. The lowest annual temperature is approximately 20 degrees and snow falls during the months of December through March. The soil in the immediate area is a light, friable, sandy loam. In subsequent visits during spring months it was observed that the plants were watered freely; apparently a little more than is customary among U.S. growers. Mercuric fungicides are used in the water applied to seedlings.

The majority of the seedlings were grown in unglazed pottery trays. All the plants were in vigorous growth and were excellent in appearance. There existed, however, two differences that were observed on some types grown in Japan and those grown in their native habitat. These differences, probably due to less available sunlight, were a weaker fragrance of flower and spines that were not quite as stiff and strong as their native grown counterpart. It is very difficult to mature cactus seed in Japan, and most seed must be imported. The Katagiri's skill has resulted in amazingly high percentages of germination and successful growth of seedlings from imported seed. They have compensated for the lack of opportunities to hybridize by developing unusual grafting techniques. A strikingly different plant is their pink bodied Gymnocalycium grown on a Cereus root stock. The plant itself appears at first view to be a delicate pink blossom on a sturdy stem.

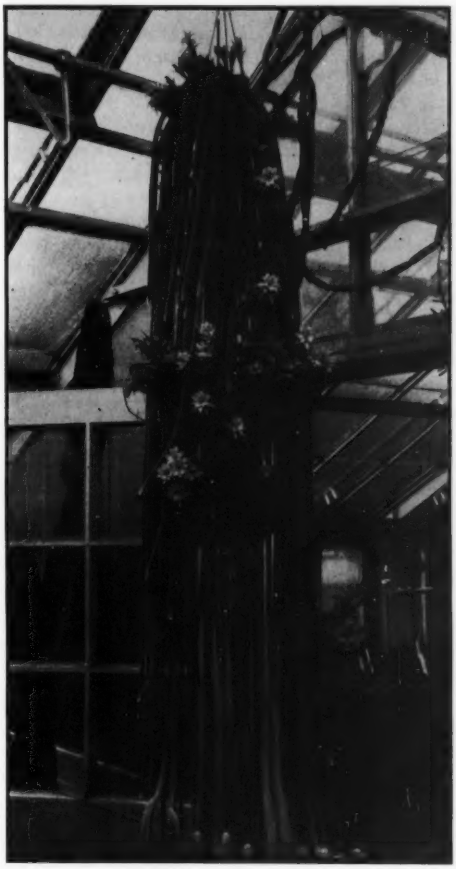
After being conducted on a most informative tour of the gardens, the writer was then led to a beautiful home surrounded with camellias, azaleas and conifers. Once inside the spacious and attractive dwelling, the charming and efficient Mrs. Katagiri served the customary tasty oriental equivalent of tea and cookies. The interior beauty of the home with its exotic furnishings is difficult to describe. Dainty, artistic beauty met the eye from all angles. Generous glass panels provided an entrancing view of the garden. The unique combination of desert plants and Japanese landscape was unexpected but pleasant. The hospitality, generosity and sincerity displayed by the host was very impressive.

The Kyorakuen Nursery sells at wholesale only and does not published a catalog at this time. Any member of the Cactus and Succulent Society who is in Japan is cordially invited to visit the nursery at this address: Kyorakuen Nursery, 2301 Tsujido, Fujisawa-Shi, Kanagawa Ken, Japan. It is easily reached by train or by automobile from Yokosuka, Yokohama or Tokyo. These three cities are each about twenty miles distant from Fujisawa. A visit to this nursery will be a most pleasant experience.

APPRECIATION FROM CHICAGO

It is most fitting to congratulate the Cactus Society of America on their outstanding Convention. We are all very grateful to Howard Gates for all his hard work which was certainly appreciated by everyone present—and a big "thank you" to our Homer Rush. I have never enjoyed anything so much in my whole life with all my cactus friends and so many interesting sights. And what a fine write-up in our JOURNAL.

MARGARET RADDEN



APOROCACTUS FLAGELLIFORMIS
Rat-tail Cactus

By H. TEUSCHER
Curator of the Montreal Botanic Garden

The over 8 ft. long plant shown in the accompaying photograph was raised from a graft on a 2 ft. high plant of *Hylocereus triangularis* which was suspended in a wire basket. As the plant developed, roots appeared at the bottom of the basket, and it became evident that more root room providing a greater feeding surface would be helpful. Therefore, a second wire basket, filled largely with old rotted manure and leafmold was suspended below the first and the roots readily entered it and filled it. The plant is now 4 years old and is still growing strongly. This year it produced almost 500 flowers over a period of several weeks and was a memorable sight.

Strangely enough the true home of the rattail cactus is not known, since like the beautiful *Sedum Morganianum* it has never been found in the wild state. It is commonly cultivated, especially in Mexico but also in other parts of Central and South America where it is suspended in various kinds of vessels, including cow horns, from the eaves of low houses. According to Britton and Brown, the dried flowers are used in Mexico as a household remedy and sometimes are sold in the drug markets under the name "flor de cuerno."

FIG. 132
Aporocactus flagelliformis

THE CACTUS OF THE REVILLAGIGEDO ISLANDS, MEXICO

By BAYARD H. BRATTSTROM
Department of Zoology, University of California, Los Angeles

The Revillagigedo Archipelago consists of four islands, the nearest of which is 210 miles southwest of the tip of Baja California, and about 400 miles west of the mainland of Mexico. The islands are, in order of increasing size, Roca Partida, San Benedicto, Clarion, and Socorro. They are all of volcanic origin and are true oceanic islands (*i.e.* They have never been connected to the mainland). Clarion Island, the farther from Baja California, is 270 miles west of Socorro Island. Roca Partida is a small barren rock, 100 yards long and 100 feet high. San Benedicto Island is about 4 miles long and 1½ miles wide. It had a flora of 11 species of plants (Johnston, 1931), all of which were destroyed by the action of the recent new volcano, El Boqueron. This volcano first erupted on August 1, 1953 (Williams, 1952, Richards, ms.). In 14 days the volcano built up a cone of 1000 feet of pumice and pumice dust, and the rest of the island was completely covered with 2 to 10 feet of dust. It probably killed all the plants on the island, though it is possible that a few will be able to grow up through the ash. Clarion Island is about 4 miles wide by 6 miles long and reaches an elevation of 1000 feet. Socorro Island is about 9 miles square and reaches an elevation of 3700 feet. In the dry season (December to September, Hanna, 1926) there is no fresh water except for a small well on Socorro Island. The terrestrial fauna consists of several species of sea and land birds, one species of snake

(Clarion), and two species of lizards (one on Clarion, one on Socorro). There are no mammals on any of the islands other than introduced sheep on Socorro, there they are barely able to maintain their numbers. The islands are uninhabited.

The flora of the islands has been discussed by Johnston (1931). The islands are semi-desert, though Socorro has broad-leafed tropical plants on its higher elevations. Most of the visitors to the islands have had reason to abhor the bushy prickly pear cactus (*Opuntia*) present on both Socorro and Clarion Islands. This cactus covers the lowland (below 2,000 feet) of Socorro and with other plants forms a thick scrub, penetrable only with the aid of a machete. On Clarion Island a cactus thicket about 200 yards wide completely encircles the island just back of the beach, with only one or two areas of comparatively easy access to the interior. Throughout the remainder of the island there are various-sized clumps of this cactus. Often these clumps are around groups of lava boulders and these places offer protection for the snake of the island.

Many expeditions have stopped at the islands (Hanna, 1926; Townsend, 1890), and the fauna and flora have been studied. However, no one has ever collected the cactus, though all mentioned it. Johnston (1931) referred to it only as *Opuntia* sp. No other cacti are known to occur on any of the four islands.

In March of 1953, I had the opportunity of visiting the Revillagigedo Islands with an expedition from Scripps Institution of Oceanography led by Mr. Adrian Richards. Though the trip was primarily concerned with the surface and submarine geology, I was able to collect on all the islands. Knowing that the cactus had not previously been collected, I obtained specimens from both Socorro and Clarion Islands. These specimens are now in the Herbarium of the University of California at Los Angeles.

The cactus present on both of the islands appears to be *Opuntia engelmannii* Salm-Dyck, 1850. The plants are usually 3 to 5 feet tall, erect, bushy, and usually with no definite trunk. The joints are orbicular and 1½ to 2 dm. long, with remote areoles. The spines are 2 to 7, yellowish to white, dark red or brown at the base, flattened (especially the largest), unequal, the longest 4 to 4½ cm. long. The glochids are numerous and yellow. The flowers are large, yellow, 7 cm. long including the ovary. The fruit is red, 4 to 5 cm. long.

In March only a few of the plants on Socorro bore flowers, and no fruit was found. In contrast, the *Opuntia* on Clarion were all in fruit, and no flowers were found. The specimens differ from typical *O. engelmannii* in a few details (length and color of spines) and approach *O. occidentalis* in others. The cacti from the two islands do not seem to differ though the islands are 270 miles apart. It is possible that this material warrants taxonomic distinction, but considering the known variation in *O. engelmannii* and *occidentalis*, the Revillagigedo cacti probably falls within *O. engelmannii*.

Opuntia engelmannii occurs today in Chihuahua, Durango, Sonora, Arizona, New Mexico, and Texas (Britton and Rose, 1919). It is not too unlikely that seeds from this area were carried to the islands by various birds or on land rafts. Many of the plants (Johnston, 1931) and the reptiles (Brattstrom, ms.) have their origin in the Sonora-Sinaloa area of Mexico.

LITERATURE CITED

BRITTON, N. L. AND J. N. ROSE
1919 The Cactaceae, Vol. I. Washington.
HANNA, G. D.
1926 Expedition to the Revillagigedo Islands, Mexico, in 1925, General Report. Proc. Calif. Sci. 4th Ser. 15 (1): 1-113.
JOHNSTON, I. M.
1931 The Flora of the Revillagigedo Islands. Ibid. 20 (2): 9-104.
TOWNSEND, C. H.
1890 Reptiles from Clarion and Socorro Islands, and the Gulf of California, with descriptions of a new species. Proc. U. S. Nat. Mus. 13: 143.
WILLIAMS, HOWEL
1952 Recent Eruption on San Benedicto Island, Revilla Gigedo Group, Mexico. Volcano Letter, 517: 7.

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TUCSON BOTANIST GIVEN FUND FOR URANIUM STUDY

Tucson, Oct. 24. Dr. Edwin B. Kurtz doesn't know positively that plants will absorb enough uranium through their roots to indicate how much uranium is in the soil, but he strongly suspects that they do. So does the Atomic Energy Commission, which has granted him $2600 for tests which will probably extend over a year or more.

It's possible, the University of Arizona botanist believes, that plants growing in the wild can be analyzed and that their uranium content will show whether it is worth while to prospect in the neighborhood for workable deposits of radioactive minerals.

Most of his work will be carried on in a greenhouse. Plants will be grown in soil of known uranium content, subjected to preliminary tests by Geiger counter and then to laboratory analysis.

Dr. Kurtz already is carrying on one research project for the AEC. He is trying to learn if radioactive materials influence the synthesis of fatty acids in plants.

(From *Los Angeles Times*)

* * *

ARTICLE WANTED

We have many subscribers in Florida and they would like to hear from growers in that state on How to Grow Cacti and Succulents in Florida. Succulents are a fine source of landscape material and more should be grown for that purpose. The high humidity and June to October rains, together with an occasional frost make out-door plantings difficult. Walter Snear, Jr., has made some fine plantings around public buildings around Daytona Beach and he would like suggestions on material that has been tested for this purpose.

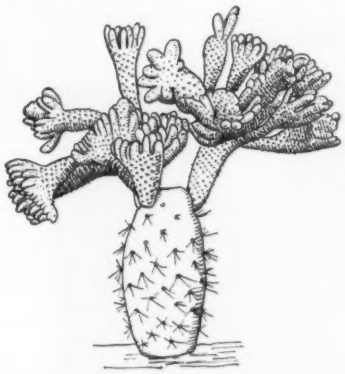


FIG. 133. *Opuntia clavarioides* (from Britton & Rose)

FROM ENGLAND

I have never noticed very much mention in your JOURNAL about *Opuntia clavarioides.** This is a particular favorite of mine—I have three grafted specimens and one on its own roots. Doubtless, many of you folks in America are well used to seeing its root system but I have searched Britton and Rose, Marshall and Bock, Borgs Cacti, as well as the British Journals without ever seeing a description of these roots. The vast majority of these plants appear to be grafted, doubtless accounting for lack of comments on roots. I took a fine crested finger off my first plant and have rooted it in a sandy soil. In 1951 a long tap root developed; during 1952 this main root had swollen considerably; in repotting this spring I was amazed to find four or five big tubers—for all the world like those of *Wilcoxia* or *Peniocereus*. There are a few thin roots attached to these but not a big root system apart from these large whitish tubers. The plant has made but little top growth but maybe all its strength has gone into tuber production and next year will see a fuller development of the crest above ground.

Another thing that greatly interests me is the cristation and monstrosity in succulents and cacti. I have about 50 or 60 different kinds but a remarkable thing is that quite a few of the plants, perfectly normal when obtained, have developed crests and other peculiar forms of growth. One or two Opuntias have developed a sort of three-sided and dichotomously branched pad; *Kleinia repens* developed a pretty crest; *Echinopsis* species have sent out a double-headed offshoot; *Cotyledon undulata* appears to be developing into a crested growth; and last of all, my *Euphorbia splendens* has just one stem doing such funny things—the leaves are twice as wide as normal, several spines are double pointed and the flowers are quaintly crested and now a fully crested shoot has developed half way along the stem. All these and one or two others have gone this way with no aid from me. Attempts I have made on a variety of plants to cause cristation* have completely failed.

I want to tell you that the JOURNAL is a source of continual pleasure to me and it answers so many of my questions. You can be sure that I shall want to be on the mailing list as long as I am able to see to read (should be a few decades yet).

JOHN STRATHAM

*For illustration see Borg "Cacti" page 78.

* * *

BIG CONTEST FOR PLANT PRIZES

Get your working clothes on and dig in to secure new members for your Society and win fine, large plants as prizes.

For each new member or for each renewal you secure (who has not been a member of the Society for two years or more) and send to the Secretary, Ethel Rush, 820 W. 115th St., Los Angeles 44, California, along with the $3.00 subscription fee (Foreign $3.50) between now and January 1st, 1955, you will receive credit for 10 points in the contest.

The person receiving the largest number of points during the contest will win first prize and so on through the first five high scorers. The plant prizes have not yet been picked out but you can be sure they will all be nice, large specimen plants which would cost many dollars if you were to buy them.

The plants will be shipped to the winners, all charges paid, soon after the contest ends and the names of the winners will be published in the JOURNAL. The Executive Board will act as Judges and their decision shall be final.

Here is a chance to obtain fine, large specimen plants for your collection by merely exerting yourself among your friends and acquaintances. You know many people who are slightly interested in Cacti and the other Succulents, so exert yourself, put on some pressure and get them to join the Society and you will be well rewarded for your time and effort.

This contest can well secure for the JOURNAL and the Society as many as 500 or more new members during the year and in so doing give to the Society a neat $500 for its treasury.

REMEMBER!!!! Get the new members and renewals, send their names and the $3.00 to the Secretary, Ethel Rush, 820 W. 115th St., Los Angeles 44, California, and win some of these fine plant prizes.

* * *

NEW SPECIES

The "Journal of South African Botany," Vol. XIX, June, 1953, describes a new species: *Aloe jucunda* Reynolds. (Habitat: Somaliland Protectorate.) In the same issue of this Journal, *Aloe Johnstonii* Bak., is identified as a synonym of *A. myriacantha*. (Habitat: South Africa, Southern Rhodesia, Tanganyika, Kenya Colony.)

TO WATER OR NOT TO WATER

Oliver Young, of Maine, who furnished many of the fine photographs for Marshall and Bock's book suggests the following debate: Why should one withhold watering cacti in October at a time when many of them want to make fall growth? Who has some ideas on this subject?

*"Colchicine" the miracle drug advertises that it "causes wondrous plant mutations!"

ODDITIES IN THE SUCCULENT WORLD

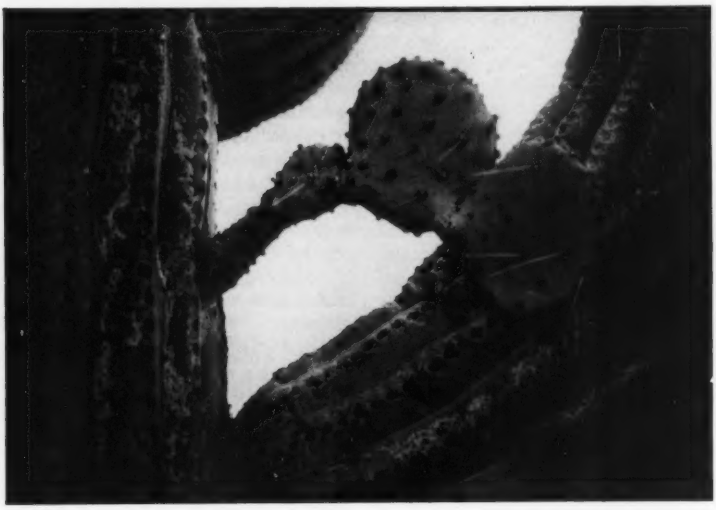


FIG. 134. *Opuntia* growing out of a Saguaro. Note how the winds and blowing sand have worn down the spines on the old growth of the *Carnegiea gigantea*. Mark photo.

THE GOLDEN BARREL CACTUS

By WM. MASTRANGEL, *Rocking Horse Cactus Gardens*

One of the highlights of our tour through the Huntington Gardens in southern California—at this year's fine cactus convention, was the wonderful display of Golden Barrel Cacti. Single specimens ranged from two to two and one-half feet in diameter with some larger clusters ranging around three feet. The largest specimens were approximately twenty to forty-five years of age and their beauty was truly a sight to see.

The Golden Barrel Cactus, *Echinocactus Grusonii,* is native to Mexico. It grows very symmetrical and has a bright green color. The plant is covered with a mass of short golden yellow spines curving downward toward the base. The plant usually grows as a single beautiful round-balled specimen, but in some occasional instances, it throws shoots from the base. These clustered specimens are very beautiful and are highly prized specimens. The yellow flowers of the Golden Barrel, run between one and two inches wide and the numerous seeds are very easy to grow. The nice part about the Golden Barrel, is that it is one of the easier cactus plants to grow in cultivation. It enjoys a very porous soil with some crushed lime in it—does well in partial shade and grows extremely well in the lath house. It would be well to remember that the Golden Barrel will burn in a full sun in the warmer climates of the Americas. Also, temperatures below thirty degrees, will freeze parts of the plant and disfigure its beauty. Always protect against continuous full sun and frost.

The Golden Barrel is always one of the show pieces in any cactus garden. It is pretty difficult for anyone to forget those great big beautiful golden balls. Many seedlings are being raised by commercial gardens and are rather reasonable but the large specimens are rather expensive, since it takes a year to gain three-quarters of an inch growth.

If you have a cactus garden with any room to spare, do not be without a nice specimen of the Golden Barrel. It will be one of the outstanding features of your garden.

* * *

Missouri Botanical Garden Bulletin

The September, 1953, issue contained an interesting write-up "Intimate Journeys to California Gardens" by Ladislaus Cutak. Mme. Ganna Walska's Lotusland and the Huntington Botanical Garden were featured along with the author's photographs.

HOW TO IMPROVE THE SOCIETY

To all Members of the Cactus and Succulent Society of America, Inc.

For several years it has seemed to me that the Society and its members have failed miserably in creating the kind of co-operative spirit which should exist in an organization of this kind.

The Society is, and rightfully should be, the International heart of our great hobby, and none of the other Societies either in this country or in Europe publish a magazine anywhere near as informative or authoritative as our own JOURNAL. Yet some of them have memberships far greater than our own. *WHY?* Simply because they have maintained a very close relationship between their members and the parent Society and have profited by so doing.

In order to try to improve the situation in our own Society, I am making this appeal to each one of you. Please sit down and write a letter, to me personally, answering the following questions in your own words and expressing your personal ideas and feeling in this matter.

1—What do *YOU* feel is wrong with the Society?
2—Does the Society help *YOU* in any way?
3—What could the Society do to help *YOU?*
4—Do *YOU* find the JOURNAL helpful?
5—How do *YOU* feel it could be made more helpful?
6—Do *YOU* feel that the policies of the Society should be changed? If so, *HOW?*

In answering this last question please do not be afraid to write exactly what you think, otherwise there will be no barometer by which to figure out what to do or how to do it.

I realize that I may be grabbing a lion by the tail, but it has seemed to me for a long time that something was lacking, whether the lack is in the Society or with the membership, I frankly cannot say.

Our problem is not to place the blame on anyone but rather to try to find out what is wrong and to make as strong an effort as we can to rectify the wrong and to bring out the kind of a Society which will be of the most good to the greatest number of people.

I trust and hope that each and everyone of you will give me your help and support in this attempt to find what is wrong and I am anxiously awaiting your replies.

I promise they will be brought out into the open for every one to see and consider and if at all possible they will be presented to the Executive Board in an acceptable manner for whatever action can be obtained. Whatever is presented to the Executive Board will be made up entirely from the ideas you members send in, so get that pen and write that letter.

HOMER G. RUSH
Member, Executive Board
820 W. 115th St.
Los Angeles 44, Calif.

COLORADO CACTOPHILES

In June we had a field trip which we hope will arouse nostalgic memories for delegates to the '51 convention. Yes, we went back to the Wakefield ranch, southwest of Colorado Springs, where we had spent part of the first day of the convention field trip. We discovered a second crested *Opuntia arborescens,* poked around in an old Indian cave and retrieved a few minor artifacts, gathered petrified wood, and enjoyed a scrumptious lunch.

There was no July meeting. August meeting was devoted to a complete report of the convention in Arcadia, California, and surrounding territory. (You folks certainly covered a lot of ground—and sights!) Our delegate, Mrs. Rutschman, brought back some fine color slides which added even more to her glowing account of the goings-on.

September was spent in routine planning for the big event, namely our display at the Denver All-Hobbies Show at the municipal auditorium. About 150 hobby groups or individuals had exhibits, ranging from old presidential-campaign buttons to intricate hand carvings, ancient gas-buggies, and the making of stained glass. Several garden clubs participated, but Colorado Cactophiles had the only showing of succulent plants. Opuntia Liz's plants illustrating "When is a Cactus not a Cactus?" was displayed as a unit, but otherwise there was no special theme to the exhibit—just an excellent grouping of specimen plants of all members. Thanks to the ingenious arrangement worked out by Mr. Tomlin and Mrs. Willis, our limited space was expanded by a pyramid of shelves so that the display stood out literally "Head-and-shoulders" above everything else in the vast hall. For accent touches, cactuswood lamps, ceramic what-nots, and handpainted ties, handkerchiefs, and belts with cactus motif were also used. It was a lot of work, but the popularity of the exhibit and the prospective members contacted made it well worth while and we are already planning to participate again next year.

The meeting at the Heacock home on October 13, was a "picture show" featuring beautiful color slides taken by Mr. Willis and Mr. Tomlin at the Wakefield ranch and the Eckstein Cactus Shack. Mrs. Rutschman's convention pictures were also shown again by special request.

ELIZABETH ECKSTEIN, *Cor. Secy.*

REPORT OF THE OCTOBER, 1953, MEETING OF THE CACTUS AND SUCCULENT SOCIETY OF CALIFORNIA

Our October meeting was held Sunday the 11th at 2:30 p.m. at the home of W. C. Andrews, 5161 Trask St., Oakland. About 30 members and guests were present.

Again one of the main orders of business was a discussion of our annual exhibits at the California Spring Garden Show to be held at Oakland from April 30th through May 7th, 1954. This is one of our big events of the year, and its preparation therefore requires a lot of discussion.

President Kimnach gave a short talk on a recent cactus-hunting trip he made through Nevada and the California Mojave region; among the rare species brought back for the University of California Botanical Garden, and shown at the meeting, was a beautiful red-and-white-spined *Sclerocactus polyancistrus, Echinocactus johnsonii,* a crested branch of *Opuntia erinacea* var. *ursina,* and *Opuntia pulchella.* The first two species are very difficult to keep alive in cultivation and collectors are usually advised to leave them in the wild; Mr. Kimnach explained that these specimens were collected because a severe drought had already killed most of the plants of these species seen on the trip. It is hoped that grafting them will prolong their life. *Opuntia pulchella* is a little-known miniature species with pretty pink flowers from central Nevada, resembling one of the South American Tephrocacti.

Also brought from the Botanical Garden was a group of rare cacti just imported from Argentina, including *Pyrrhocactus strausianus, Parodia setifera, P. catamarcensis, P. stuemeri* and *P. nivosa.* The meeting ended with discussions centering around plants brought by other members; several Echeverias were especially outstanding.

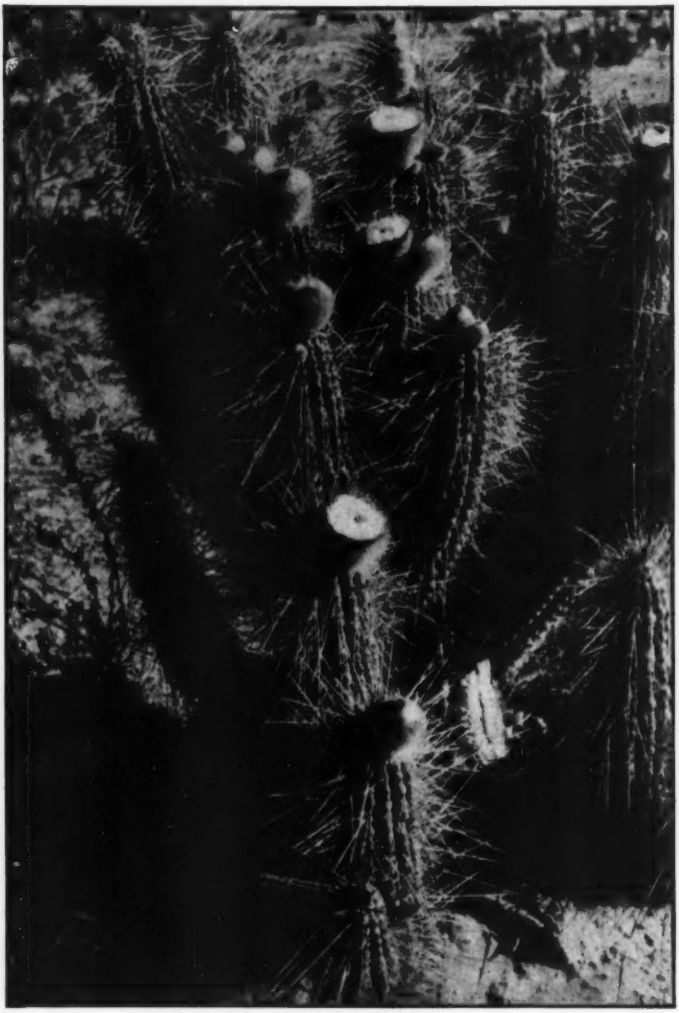
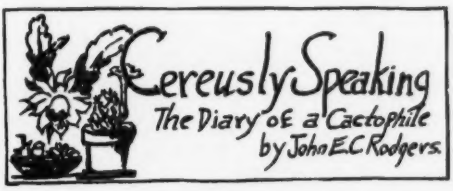


FIG. 135. *Eulychnia castanea*

FROM CHILE

Harry Johnson sends this photograph of a little known cactus from Chile. His first impression was that it might be a *Trichocereus coquimbanus* of Britton and Rose. Dr. Wygnanki says of it: "It is one of the most remarkable cacti that grows in Chile—*Eulychnia castanea* which was formerly called *Cereus nigripilis** by Dr. Reiche. I just came back from a trip to the desert regions of the northern parts of our country and found this specimen covering the rocks near the coast. Each segment is about two feet high and there are about 40 on one plant. With their long spines, of about two inches, it is a gorgeous sight as you may infer from the photograph. It is rather difficult in culture; one never sees it here in collections, perhaps due to the fact that it is not easy to root a cutting. Another astonishing thing about this and other Chilean Cerei is that one rarely finds a young specimen."

*See photograph by Dr. Carlos Reiche in Monat. für Kakt. 11:27 (1901).



The ant situation, both in and out, has been controlled by the use of 50% wettable "DDT." Ants may be of use to peony growers but the sticky buds on peonies are natural while sticky buds on cacti indicate mealy bugs. It's time to spray with any good spray and soak the soil with same. I did use "Black Leaf-40" but now I use "Rotecide extra Garden Spray." It is for aphis, thrip, red spider, young scale, mealy bugs, ants, etc. The thing I like about it is that it does not have to be mixed with any other spray or spreader as it is a complete spray in itself. It kills mealy bugs on the roots of the plants that I've tried it on. The thrip population is controlled and ants stay away or have died since I sprayed. The dilution table is manageable in small quantities for us who like to spray our small collections and can't figure our small needs from the nursery-types of sprays. I recommend it and it is a product of the Rotenone Products Co., East Orange, New Jersey.

I always speak about the spring as if we had the delightful season here. We don't. It is cold, damp, and cloudy until June 15, then hot, humid and partly cloudy with dry weather until mid-October, then Indian summer and winter. I bet you folks in California wish you had our weather and we had yours at times; well, so do we.

From my observations we cactophiles need to make more investigations into the control of nematodes. I've been trying to get information from several insecticide makers as well as greenhouse men, growers, sellers of sprays, etc., but so far I've been unable to get any more information than in our own "Cacti for the Amateur" (pgs. 98-99). Page 95 of the "Epiphyllum Handbook" gives the same treatment, "cut off the roots back to clean tissue and re-root." Surely there is some preventative that could be used in the soil which would save us all this drastic action after the damage is done. Perhaps something like the selenates could be used. As far as I can find out the growers have reports as to its effect when applied for other insect life; if it does control nematodes, let's hear about it. Until we find the answer to this pest we have no alternative than "cut off the roots and re-root." There will be loss of plants in the process but this is to be expected. I do not use any sand or soil below my plants, just let the pots set on the boards as the nematodes travel from one pot to another if sand or soil is wet. They may even do so on wet lumber but I do not keep the boards wet.

About four years ago I was given a sample of "Hyponex" made in Akron, Ohio, and I was told that it was nearer the proportions of the fertilizers used in Holland, Germany, and other places having extremely sandy soil. I used it as directed especially on the plants that I hadn't repotted for at least three years. I've kept records which I feel do show that Hyponex is of definite value to older plants which stay in the same pots for several years as well as for seedlings and sand-box cuttings before and after rooting. Improved metabolism results from its use. I'm still a firm beliver in new soils for good growth but Hyponex renews the rarer minerals which keep the plants in good health if the soils are not changed as often as they should be. I checked this for better stem development, more buds retained through flowering stage, better color of leaf and flower in succulents and Pereskias. The only trouble with the use of fertilizers is that it stimulates the plants beyond the time they should grow and delays ripening for their winter rest thus causing disfiguring and etiolation during the winter and also starts too early spring growth when the light is not strong enough for normal growth.

The ones that I have observed that were benefitted most were *Selenicereus*—strong new shoots where the plants had been semi-dormant before; *Echinopsis*—more vigor, better setting of buds and flowers; *Rebutia*—which slowed up in growth and puny from indoor culture put out new growth and took on new vigor; *Epiphyllum* species and Orchid Cacti—although in small pots, set buds which developed the full way. I also observed good results with Euphorbias, Echeverias, Mammillarias, columnar cacti, etc.

The newest miracle for the home gardener and house plant grower is "RX-15" which contains seven nutregenes (rare minerals in complex organic form): copper, manganese, magnesium, iron, molybdenum, born, and zinc. It is put out by the Garden Research Laboratories, 141 Fifth Ave., New York, N. Y. RX-15 can be used for leaf feeding by putting it in the sprays used to control diseases and insects as well as a soil nutrient. It does mention succulents, so I obtained a free sample through a neighbor and tried it. I'm certain after four weeks that Pereskias, Pereskiopsis, Orchid Cacti, rarer Opuntias, leafy Euphorbias, Echeverias, Stapelias, Huernias, Rhipsalis, etc., benefitted in spite of the waxy covering of some when I applied it with a "mist-sprayer." Some of the spray, of course, dripped on to the soil also. I may have on my rose-tinted glasses but I like to look through them sometimes and believe that I did see good results from it. It is odorless but tinted green so that you know the stuff is there, leaves no residue on stems and dissolves 100%. It tests 15-30-15. I've used it on plants that grow for me anyhow so take your choice. It is a miracle fertilizer or the plants do well anyhow. If the soils of long-used districts are depleted then here are the rare elements needed for both human and plant health.

Radioactive zinc was used on tomatoes and it showed up in the seeds only. I wonder what we could find if we used some radioactive elements on our plants? We've counted chromosomes and established new information about generic differences. Since the cactus family is one of the most recent to develop among nature's plant families (a mere 100,000 years or so), why shouldn't it be singled out to have some of our atomic scientists in the field of botany work on this project?

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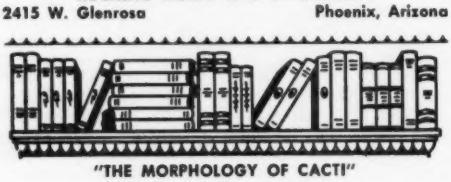

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By Dr. Franz Buxbaum

Part II, The Flower

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